

REVISION OF THE TATE MOLLUSCAN TYPES — SCAPHOPODA.

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SUMMARY

The present paper is the first of a series revising the molluscan species described by Tate. The scaphopoda are all lodged in the Tate Museum Collection, University of Adelaide.

INTRODUCTION

At the suggestion of Dr. M. F. Glaessner the writer has undertaken, on a long-term basis, the revision of the type collection of mollusca described by Ralph Tate between 1878 and 1899.

For the 50 years following the death of Tate in 1901 this material constituted the principal basis of Tertiary correlation in South Australia. It is now desirable that the mollusca be revised and aligned with the microfaunas which have been studied during the last six years at the University of Adelaide and the South Australian Department of Mines.

The scaphopod species are all in the Tate Museum Collection. They are a small group of some significance in stratigraphic interpretation.

Phylum MOLLUSCA

Class SCAPHOPODA

Family DENTALIIDAE

Genus DENTALIUM Linné, 1758

Type species (s.d. Montfort, 1810) *Dentalium elephantinum* Linné

Subgenus DENTALIUM s. str.

Dentalium (*Dentalium*) *aratum* Tate

pl. 1, fig. 3

Dentalium aratum Tate, 1887, Trans. Roy. Soc. S. Aust., 9, p. 192, pl. 20, fig. 8.

Dentalium aratum Tate, Harris, 1897, Cat. Tert. Moll. Brit. Mus., 1, p. 293.

Dentalium aratum Tate, Pilsbry & Sharp, 1898, Tryon's Man. Conch., 17, p. 199.

Dentalium (*Episiphon*) *aratum* Tate, 1899, Trans. Roy. Soc. S. Aust., 23 (2), p. 265.

Dentalium aratum Tate, Chapman & Cressin, 1928, Rec. Geol. Surv. Vic., 5 (1), p. 159.

Dentalium (*Paradentalium*) *aratum* Tate, Cotton and Ludbrook, 1938, Trans. Roy. Soc. S. Aust., 62 (2), p. 223.

Diagnosis—A small *Dentalium* with from 6 to 8 primary ribs narrower than the interspaces with fine secondary riblets and threads developing anteriorly. Strongly curved posteriorly, nearly straight anteriorly.

Description of Holotype—Shell small, fairly strongly arcuate, polygonal in section with 7 strong primary ribs and fine longitudinal threads or riblets in the interspaces. Ribs narrow, interspaces wide, shell strongly curved posteriorly, straightening anteriorly, gradually tapering. Apex and aperture polygonal.

Dimensions—Length 20 mm., diameter at apex 1 mm., diameter at aperture 2 mm., arc 2 mm.

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Type Locality—Cadell Marl Lens, River Murray, 4 miles below Morgan, Hundred Cadell, Section G; Lower Miocene.

Holotype—Tate Mus. Coll., T 256A.

Material—On original tablet T 256 holotype and 25 paratypes in 3 rows: top row numbered 1—1 seven paratypes Muddy Creek, numbered 4 one paratype Spring Creek; middle row numbered 5—5 four paratypes Gellibrand, the holotype, and 4 paratypes R. Murray; bottom row numbered 2 one paratype Fyansford, numbered 3 two paratypes Schnapper Point, 6 paratypes R. Murray.

The original description cites the species as occurring in the Muloowurtie Clays, but no specimens from this locality are in Tate's material.

Stratigraphical Range—Miocene-?Pliocene.

Dentalium (*Dentalium*) *latesulcatum* Tate

pl. 1, fig. 1

Dentalium latesulcatum (err. pro *latesulcatum*) Tate, 1899, Trans. Roy. Soc. S. Aust., 23 (2), p. 262, pl. 8, fig. 9.

Dentalium (*Paradentalium*) *houchini*, Cotton & Ludbrook, 1938, Trans. Roy. Soc. S. Aust., 62 (2), p. 224, pl. 12, fig. 6.

Dentalium (*Dentalium*) *latesulcatum* Tate, Ludbrook, 1936, Trans. Roy. Soc. S. Aust., 79, pp. 1-2, pl. 1, figs. 10-14 (gives full synonymy).

Diagnosis—A short thick solid *Dentalium* with 7 to 16 strong primary ribs approximately equal to interspaces in which secondary ribs may be developed by intercalation.

Description of Holotype—Shell short, thick, solid, only very slightly curved, rapidly tapering, sculptured with 10 strong primary ribs narrower than the interspaces in which secondary riblets rise near the aperture by intercalation. Interspaces irregularly and strongly crossed by growth striae which pass less conspicuously over the ribs. Apex with a notch. Aperture circular internally, polygonal externally.

Dimensions—Length 40 mm., diameter at apex 3 mm., diameter at aperture 8 mm.

Type Locality—Grange Burn, Hamilton, Victoria; Grange Burn Coquina, Pliocene.

Holotype—Tate Mus. Coll., T 1610A.

Material—The holotype and 6 paratypes on original tablet; specimens labelled *Dentalium elephantinum* and recorded as such (Tate, 1890, p. 177) Dry Creek Bore.

Stratigraphical Range—Pliocene.

Subgenus *ANTALIS* H. Adams & A. Adams, 1854

Type species (s.d. Pilsbry & Sharp, 1897) *Dentalium entalis* Linné

Dentalium (*Antalis*) *bifrons* Tate

pl. 2, fig. 2

Dentalium (?) *bifrons* Tate, 1887, Trans. Roy. Soc. S. Aust., 9, pp. 192-3, pl. 20, fig. 5.

Dentalium bifrons Tate, Tate & Dennant, 1893, Trans. Roy. Soc. S. Aust., 17 (1), p. 223.

Dentalium bifrons Tate, Harris, 1897, Cat. Tert. Moll. Brit. Mus., 1, p. 235.

Dentalium bifrons Tate, Pilsbry & Sharp, 1898, Tryon's Man. Conch., 17, p. 200.

Dentalium (*Fissidentalium*) *bifrons* Tate, Cotton & Ludbrook, 1938, Trans. Roy. Soc. S. Aust., 62 (2), p. 222.

Diagnosis—A large solid, gradually tapering and only slightly curved *Antalis*, finely ribbed in the posterior one-quarter, obsolete or smooth elsewhere but for conspicuous oblique growth lines. Apex with or without slit.

Description of Holotype—Shell large and solid, only slightly curved, more so in the posterior one-third, nearly straight in the anterior two-thirds. Posterior one-quarter with about 40 fine ribs which rapidly become obsolete. Anterior portion of shell smooth, with microscopic and conspicuous oblique growth striae. Shell gradually tapering over all. Apex circular in the holotype, without slit. Aperture circular, only slightly oblique.

Dimensions—Length 92 mm., diameter at apex 2 mm., diameter at aperture 9.4 mm., arc 3.6 mm.

Type Locality—Muddy Creek, Hamilton, Victoria; Grange Burn Coquina, Pliocene.

Holotype—Tate Mus. Coll., T 255.

Material—On tablet T 255, the holotype and 2 paratypes from Muddy Creek, one paratype Spring Creek. One large topotype 96 mm. long with apical slit 5.5 mm.

Stratigraphical Range—Miocene-Pliocene.

Dentalium (Antalis) sectiforme Tate

pl. 2, fig. 5

Dentalium (Graptacme) sectiforme Tate, 1899, Trans. Roy. Soc. S. Aust., 23 (2), p. 262, pl. 8, figs. 6, 6a.

Dentalium (Graptacme) sectiforme Tate, Cotton and Ludbrook, 1938, Trans. Roy. Soc. S. Aust., 62 (2), p. 225.

Diagnosis—A small, slender *Antalis*, moderately curved, sculptured posteriorly with fine riblets increasing by intercalation from about 16 at the apex to about 30 where they become obsolete in the anterior quarter.

Description of Holotype—Shell small, very slender and gradually tapering, fairly thin but solid, glossy, translucent, sculptured in the posterior three-quarters with fine riblets, 16 at the apex increasing by intercalation to about 30 at the anterior one-quarter where they become obsolete, but are still visible under the microscope. Anterior quarter showing fine growth striae.

Aperture circular, peristome thin; apex with a short slit and small supplementary pipe.

Dimensions—Length 11 mm., diameter at apex 0.05 mm., diameter at aperture 2.2 mm., arc 1.5 mm.

Type Locality—Muddy Creek, Victoria; Grange Burn Coquina, Pliocene.

Holotype—Tate Mus. Coll., T 1615A.

Material—The holotype and 5 paratypes.

Stratigraphical Range—Lower Pliocene of Muddy Creek.

Subgenus *FUSTIARIA* Stoliczka, 1868

Type species (s.d. Pilsbry & Sharp, 1897) *D. circinatum* Sowerby

Dentalium (Fustiaria) tornatissimum Tate

pl. 2, figs. 6, 7

Dentalium (Episiphon) tornatissimum Tate, 1899, Trans. Roy. Soc. S. Aust., 23 (2), p. 265, pl. 8, figs. 7-7a.

Dentalium (Episiphon) tornatissimum Tate, Cotton and Ludbrook, 1938, Trans. Roy. Soc. S. Aust., 62 (2), p. 226-7.

Diagnosis—A very small solid *Fustiaria* with conspicuous annular grooves, about 8 per mm.

Description of Holotype—Shell small but solid, nearly straight, sculptured with incised annular grooves, varying from 10 per mm. in the apical portion to less than 8 towards the aperture. Apex with a short terminal pipe, aperture broken, circular in section.

Dimensions—Length 7.3 mm., diameter at aperture 1.37 mm., diameter at apex 0.55 mm., arc 0.27 mm.

Type Locality—Jemmy's Point, Gippsland; Jemmy's Point Formation, Kalimnan (Pliocene).

Holotype—Tate Mus. Coll., T 1609.

Material—The holotype and paratype.

Stratigraphical Range—Kalimnan (Pliocene).

Subgenus *GADILINA* Foresti, 1895

Type species (monotypy) *D. triquetrum* Brocchi, 1814

Dentalium (*Gadilina*) *tatei* Sharp & Pilsbry

pl. 1, fig. 5

Dentalium (?) *triquetrum* Tate, 1887, Trans. Roy. Soc. S. Aust., 9, p. 193, pl. 20, fig. 3 (*nom* Brocchi, 1814).

Dentalium tatei Sharp & Pilsbry, 1898, Tryon's Man. Conch., 17, p. 218 (*nom. nov.*).

Dentalium (*Gadilina*) *tatei* Sharp & Pilsbry, Tate, 1899, Trans. Roy. Soc. S. Aust., 23 (2), p. 266.

Dentalium (*Gadilina*) *tatei* Pilsbry & Sharp, Cotton & Ludbrook, 1938, Trans. Roy. Soc. S. Aust., 62 (2), p. 227.

Diagnosis—A small but solid *Gadilina*, very slightly curved.

Description of Holotype—Shell small, solid, smooth but for microscopic growth lines, thick, only very slightly curved and only slightly tapering. Laterally compressed. Aperture broken, apex triangular in section.

Dimensions—Length 10 mm., diameter at apex 0.7 mm.

Type Locality—Adelaide Bore, Kent Town, glauconitic sands, Upper Eocene.

Holotype—Tate Mus. Coll., T 252A.

Material—The holotype and six paratypes.

Stratigraphical Range—Upper Eocene.

Subgenus *LAEVIDENTALIUM* Cossmann, 1888

Type species (o.d.) *D. incertum* Deshayes

Dentalium (*Laevidentalium*) *acriculum* (Tate)

pl. 1, fig. 2

Entalis acriculum Tate, 1887, Trans. Roy. Soc. S. Aust., 9, p. 192, pl. 20, fig. 11.

Dentalium lacteum Tate, 1887, *ibid.*, p. 193, *unn* Deshayes.

Dentalium acriculum Tate, Pilsbry & Sharp, 1898, Man. Conch., 17, p. 197.

Dentalium (*Laevidentalium*) *lacteolum* Tate, 1899, Trans. Roy. Soc. S. Aust., 23 (2), p. 264.

Dentalium (*Fustiaria*) *acriculum* Tate, 1899, *ibid.*

Dentalium (*Laevidentalium*) *lacteolum* Tate, Cotton and Ludbrook, 1938, Trans. Roy. Soc. S. Aust., 62 (2), p. 226.

Dentalium (*Fustiaria*) *acriculum* (Tate), Cotton and Ludbrook, 1938, *ibid.*

Diagnosis—A small, smooth, thin, gently curved *Laevidentalium*.

Description of Holotype—Shell small, thin, subulate, gently curved, smooth, polished, with microscopic growth lines. Apex with a slit, aperture circular, oblique.

Dimensions—Length 33 mm., diameter at apex 0.85 mm., diameter at aperture 2.5 mm., arc 2.0 mm.

Type Locality—Muddy Creek, Victoria; Muddy Creek Marls, Lower Miocene.

Holotype—Tate Mus. Coll., T 251.

Material—On tablet T 251 the holotype and 8 paratypes (Muddy Creek); on tablet T 253 originally labelled *Dentalium lacteum* Deshayes and later corrected to *Dentalium lacteolum* Tate, six specimens Muddy Creek, one Gelli-

brand. Tate separated these from *acriculum* on the absence of the apical fissure which is not regarded as a diagnostic feature. 3 of the paratypes of *acriculum* have no fissure and the two species are indistinguishable.

The annular striae of the type description are merely very faint growth striae.

Stratigraphical Range—Lower Miocene.

Dentalium (Laevidentalium) australe Sharp & Pilsbry

pl. 2, fig. 1

Eutalis annulatum Tate, 1887, Trans. Roy. Soc. S. Aust., 9, pp. 191-2, pl. 20, figs. 6a, 6b, non Gmelin, nec Meyer, nec Sandberger.

Dentalium australis Sharp & Pilsbry, 1898, Tryon's Man. Conch., 17, p. 199 (nom. mut.).

Dentalium (Fustiaria) australe Sharp & Pilsbry, Tate, 1899, Trans. Roy. Soc. S. Aust., 23 (2), pp. 264-5.

Dentalium (Fustiaria) australe Sharp & Pilsbry, Cotton and Ludbrook, 1938, Trans. Roy. Soc. S. Aust., 62 (2), p. 226.

Diagnosis—A fairly large solid *Laevidentalium* nearly straight in the adult, with conspicuous fairly even growth striae, about 6 per mm.

Description of Holotype—Shell stout, fairly large and evenly tapering, only slightly curved, more particularly in the posterior one-third. Shell smooth but for conspicuous incised and fairly even growth striae, generally about 6 per millimetre. Apex rounded with a slit about 3 mm. long. Aperture circular, not oblique.

Dimensions—Length 68 mm., diameter of apex 2 mm., diameter of aperture 7 mm., are 2 mm.

Type Locality—Muddy Creek, Victoria; Muddy Creek Marls, Lower Miocene.

Holotype—Tate Mus. Col., T 250A.

Material—The holotype and 3 paratypes, on tablet with six mounted specimens. The holotype is the second from the left, the paratype third from the left is a specimen 53 mm. long of which the apex with terminal pipe was figured (Tate, 1887, pl. 20, fig. 6b).

Two specimens, the extreme left and the second from right on the tablet, do not belong to the species but to a large undescribed species on tablet T 258 with 4 specimens of *D. subfissura* from the Murray Cliffs.

The dimensions of the holotype are incorrectly given in the original description.

Stratigraphical Range—Upper Oligocene-Lower Miocene.

Dentalium (Laevidentalium) largicrescens Tate

pl. 1, fig. 4

Dentalium largicrescens Tate, 1899, Trans. Roy. Soc. S. Aust., 23 (2), p. 264, pl. 8, figs. 10, 10a.

Dentalium largicrescens Tate, Chapman & Cressin, 1928, Rec. Geol. Surv. Vic., 5 (1), p. 159.

Dentalium (Laevidentalium) largicrescens Tate, Cotton and Ludbrook, 1938, Trans. Roy. Soc. S. Aust., 62 (2), p. 225.

Diagnosis—A short, solid, rapidly tapering and slightly curved *Laevidentalium*.

Description of Holotype—Shell of moderate size, moderately thick, smooth and shining with conspicuous slightly oblique growth striae. Shell rapidly tapering, gently curved in the posterior one-third but only slightly curved towards the aperture. Apex circular, thick, with an apical fissure on the ventral side, aperture circular, relatively thin.

Dimensions—Length 44 mm., diameter at apex 1.0 mm., diameter at aperture 6.5 mm., arc 2.5 mm.

Type Locality—Beaumaris, Victoria; Sandringham Sands, Black Rock Member, Cheltenhamian (Upper Miocene).

Holotype—Tate Mus. Coll., T 1611.

Material—On tablet T 1611, the holotype and five paratypes from Beaumaris, one paratype from the Pliocene of Muddy Creek. One specimen Muddy Creek.

Stratigraphical Range—Cheltenhamian (Upper Miocene)—Kalimnan (Lower Pliocene).

Dentalium (Laevidentalium) pictile Tate

pl. 2, fig. 4

Entalis subfissura Tate, Tate and Dennant, 1896, Trans. Roy. Soc. S. Aust., 20 (1), p. 134.

Dentalium (Laevidentalium) pictile Tate, 1899, Trans. Roy. Soc. S. Aust., 23 (2), p. 263, pl. 8, fig. 8.

Dentalium (Laevidentalium) pictile Tate, Cotton and Ludbrook, 1938, Trans. Roy. Soc. S. Aust., 62 (2), p. 225.

Diagnosis—A strongly curved *Laevidentalium* of moderate size, evenly tapering.

Description of Holotype—Shell slender, of moderate size, gradually tapering, strongly curved, smooth but for fine growth striae, dark grey to black in colour with light bands. Apex slightly oval, with a short broad notch, aperture rounded, oblique.

Dimensions—Length 52 mm., diameter at apex 1 mm., diameter at aperture 5 mm., arc 6.5 mm.

Type Locality—Table Cape, Tasmania; Oligocene.

Holotype—Tate Mus. Coll., T 1608.

Material—Tablet T 1608 with holotype and paratype only.

Stratigraphical Range—Upper Oligocene—Lower Miocene.

Dentalium (Laevidentalium) subfissura (Tate)

pl. 2, fig. 3

Entalis subfissura Tate, 1887, Trans. Roy. Soc. S. Aust., 9, p. 191, pl. 20, figs. 4a-b.

Dentalium subfissura Tate, Harris, 1897, Cat. Tert. Moll. Brit. Mus., (1), p. 296; Pilsbry & Sharp, 1898, Man. Conch., 17, p. 216.

Dentalium subfissura Tate, 1899, Trans. Roy. Soc. S. Aust., 23 (2), p. 263.

Dentalium subfissura Tate, Chapman & Crespin, 1928, Rec. Geol. Surv. Vic., 5 (1), p. 159.

Dentalium (Laevidentalium) subfissura Tate, Cotton & Ludbrook, 1938, Trans. Roy. Soc. S. Aust., 62 (2), p. 225.

Diagnosis—An evenly tapering and moderately arcuate *Laevidentalium* of moderate size.

Description of Holotype—Shell of moderate size for the subgenus, thin, subulate, slightly compressed dorso-ventrally, smooth except for oblique growth striae. Apex small, subcircular, with a fairly broad V-shaped notch on the ventral side and a small supplementary pipe. Aperture oblique, slightly oval, dorso-ventrally compressed.

Dimensions—Length 46 mm., diameters at aperture 4 and 4.25 mm., diameter at apex 1 mm., arc 4 mm.

Type Locality—River Murray Cliffs 4 miles downstream from Morgan, Hundred of Cadell, Section G. Morgan Limestone (Lower Miocene).

Holotype—Tate Mus. Coll., T 249A.

Material—On tablet the holotype and the following paratypes: River Murray 2, Muddy Creek 3, Gellibrand River 3, Spring Creek 1, Schnapper Point 2, Aldinga Bay (Blanche Point Marls) 3, Corio Bay 1. Table Cape specimen was

evidently removed from the tablet and described as *D. pictile*, the holotype of which just fits the unfaded space. T 258 consists of 4 topotypes from River Murray, and one large *Laevidentalium* belonging to another species.

Also in the Tate Collection 1 specimen Dry Creek Bore, 34 examples unlocalized probably from Muddy Creek, 1 specimen from the Eocene of Adelaide Bore, 12 specimens Schnapper Point, 12 specimens Blanche Point Marls, 11 topotypes River Murray, 27 specimens Muddy Creek.

Stratigraphical Range—Upper Eocene to Lower Miocene. Common in Lower Miocene of Murray Basin.

Family SIPHONODONTALIIDAE Simroth, 1894

Genus CADULUS Philippi, 1844

Type species (monotypy) *Dentalium ovulum* Philippi

Subgenus GADILA Gray, 1847

Type species (o.d.) *Dentalium gadus* Montagu

Cadulus (Gadila) mucronatus Tate

pl. 1, fig. 8

Cadulus mucronatus Tate, 1887, Trans. Roy. Soc. S. Aust., 9, p. 193, pl. 20, fig. 10.

Cadulus mucronatus Tate, Harris, 1897, Cat. Tert. Moll. Brit. Mus., 1, p. 297.

Cadulus mucronatus Tate, Pilsbry & Sharp, 1898, Tryon's Man. Conch., 17, p. 237.

Cadulus mucronatus Tate, 1899, Trans. Roy. Soc. S. Aust., 23 (2), p. 266.

Diagnosis—A small *Gadila*, bulging slightly to the anterior of the middle. Gently curved, fairly rapidly tapering at each end. Wider anteriorly than towards the apex.

Description of Holotype—Shell fairly small, solid, narrow, gently arcuate on the ventral surface and bulging on the dorsal surface. Contraction towards the anterior aperture fairly pronounced over 2 mm.; contraction to the posterior more gradual over a length of 3 mm.

Aperture broken in the holotype, otherwise oblique, apex also broken, otherwise rounded, sharp, and thickened within.

Surface smooth, polished, with slightly oblique growth lines and faint signs of banding to the anterior.

Dimensions—Length 6.3 mm., diameter at apex 0.7 mm., at aperture 1.0 mm., at swelling 1.63 mm.

Type Locality (here designated)—Muddy Creek, Victoria; Muddy Creek Marls, Lower Miocene.

Holotype—Tate Mus. Coll., T 229A.

Material—The holotype and 14 paratypes in 2 rows mounted on card in box mounted on tablet labelled "*Cadulus mucronatus* Tate pl. XX., fig. 10. Eocene Muddy Ck., 1 Spring Ck."

The holotype is the specimen at the left of the bottom row.

There is nothing on the card to indicate which specimens come from Muddy Creek and which from Spring Creek.

One large shell fifth from the left of the bottom row does not belong to the species.

Stratigraphical Range—Lower Miocene.

Cadulus (Gadila) acuminatus Tate

pl. 1, fig. 7

Cadulus acuminatus Tate, 1887, Trans. Roy. Soc. S. Aust., 9, p. 194.

Cadulus (Gadila) acuminatus Tate, Pilsbry & Sharp, 1898, Tryon's Man. Conch., 17, p. 183.

Cadulus (Gadila) acuminatus Tate, 1899, *id.* 23 (2), p. 266, pl. 8, fig. 12.

Cadulus acuminatus Desh. Dennant & Kitson, 1903, Rec. Geol. Surv. Vic., 1 (2), p. 145.

Cadulus acuminatus Tate, Ludbrook, 1941, Trans. Roy. Soc. S. Aust., 65 (1), p. 101.

Cadulus (*Gadila*) *acuminatus* Tate, Ludbrook, 1956, *id.* 79, p. 5, pl. 1, fig. 2.

Diagnosis—A very small *Gadila* slightly curved and not bulging.

Description of Holotype—Shell rather thin, very small, slightly curved, gently tapering anteriorly and slightly more so posteriorly. Dorsal face with gentle curvature, ventral face somewhat more arcuate. Surface of shell somewhat eroded, otherwise smooth.

Apex circular, slightly oblique, thin; aperture small, circular, thin.

Dimensions—Length 5.3 mm., diameter at the middle 1 mm., diameter at aperture 0.75 mm.

Type Locality—Aldinga Bay; Oyster Beds, Pliocene.

Holotype—Tate Mus. Coll., T 231A.

Material—The holotype (the middle specimen) and 2 paratypes mounted on card in tube on tablet labelled "*Cadulus acuminatus* Deshayes Miocene Aldinga".

Tate's (1899, p. 266) explanation of his use of Deshayes's MSS name is sufficiently clear. Deshayes's material has not yet been described; the tablet as originally labelled is still in the British Museum.

Stratigraphical Range—Pliocene of Aldinga Bay and the Adelaide Basin.

Cadulus (*Gadila*) *infans* Tate

pl. 1, fig. 6

Cadulus infans Tate, 1899, Trans. Roy. Soc. S. Aust., 23 (2), p. 266, pl. 8, fig. 11.

Diagnosis—A very small *Gadila*, very slightly curved and slightly bulging in the anterior one-third.

Description of Holotype—Shell thin, white, smooth, very small, shining, slightly bulging in the anterior one-third and very gently tapering posteriorly, slightly more so in the anterior third. Dorsal face nearly straight, ventral face gently arcuate. Apex broken, apparently circular, aperture oblique, thin.

Dimensions—Length 3.2 mm., maximum diameter 0.51 mm., diameter at aperture 0.5 mm., arc 0.05 mm.

Type Locality—Muddy Creek, Victoria; Grange Burn Coquina, Pliocene.

Holotype—Tate Mus. Coll., T 1614.

Material—The holotype only.

Stratigraphical Range—Pliocene.

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TATE MOLLUSCAN TYPES
EXPLANATION OF PLATES

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PLATE 1

- Fig. 1.—*Dentalium* (*Dentalium*) *latesulcatum* Tate. Holotype, T 1610A, x 2·5.
Fig. 2.—*Dentalium* (*Laevidentalium*) *acriculum* (Tate). Holotype, T 251, x 2·5.
Fig. 3.—*Dentalium* (*Dentalium*) *aratum* Tate. Holotype, T 256A, x 5.
Fig. 4.—*Dentalium* (*Laevidentalium*) *largicrescens* Tate. Holotype, T 1611, x 2.
Fig. 5.—*Dentalium* (*Gadilina*) *tatei* Sharp & Pilsbry. Holotype, T 252A, x 12.
Fig. 6.—*Cadulus* (*Gadila*) *infans* Tate. Holotype, T 1614, x 20.
Fig. 7.—*Cadulus* (*Gadila*) *acuminatus* Tate. Holotype, T 231A, x 10.
Fig. 8.—*Cadulus* (*Gadila*) *mucronatus* Tate. Holotype, T 229A, x 11.

PLATE 2

- Fig. 1.—*Dentalium* (*Laevidentalium*) *australe* Sharp & Pilsbry. Holotype, T 250A, x 2·5.
Fig. 2.—*Dentalium* (*Antalis*) *bifrons* Tate. Holotype, T 255, x 1·5.
Fig. 3.—*Dentalium* (*Laevidentalium*) *subfissura* (Tate). Holotype, T 249A, x 2·5.
Fig. 4.—*Dentalium* (*Laevidentalium*) *pictile* (Tate). Holotype, T 1608, x 2.
Fig. 5.—*Dentalium* (*Antalis*) *sectiforme* Tate. Holotype, T 1615A, x 10.
Fig. 6.—*Dentalium* (*Fustiaria*) *tornatissimum* Tate. Holotype, T 1609A, x 9.
Fig. 7.—*Dentalium* (*Fustiaria*) *tornatissimum* Tate. Paratype, T 1609B, x 9.